FIG. 1

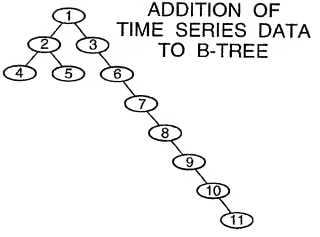

ADDITION OF
TIME SERIES DATA
TO B-TREE
1
2
3
4
5
6
7
8
9
10
11

FIG. 2

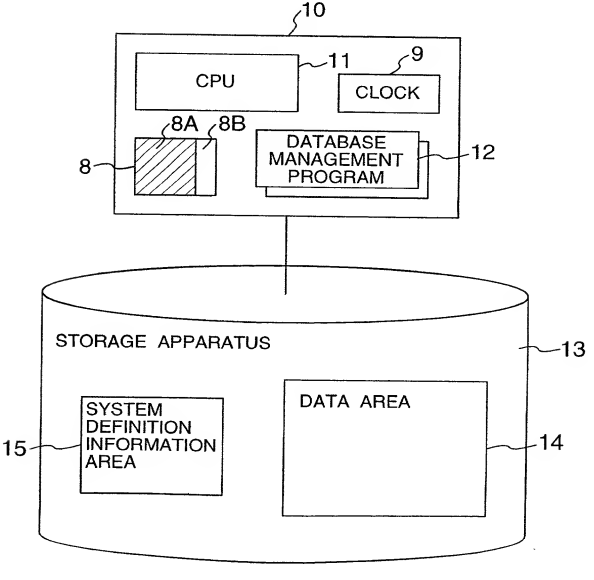

10
CPU
11
9
CLOCK
8A
8B
8
DATABASE
MANAGEMENT
PROGRAM
12
STORAGE APPARATUS
13
SYSTEM
DEFINITION
INFORMATION
AREA
15
DATA AREA
14

FIG. 3

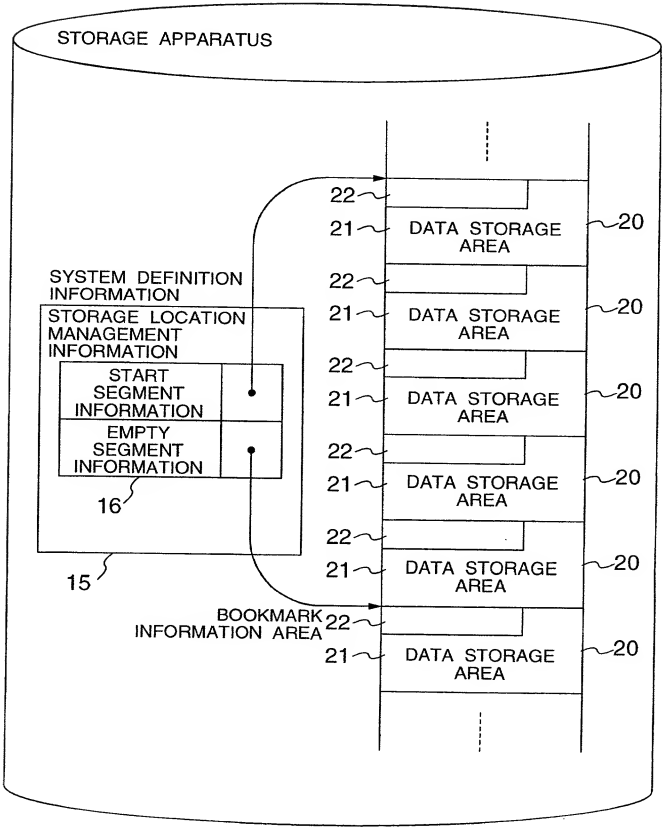

STORAGE APPARATUS
SYSTEM DEFINITION INFORMATION
STORAGE LOCATION MANAGEMENT INFORMATION
START SEGMENT INFORMATION
EMPTY SEGMENT INFORMATION
16
15
BOOKMARK INFORMATION AREA
22
21
DATA STORAGE AREA
20

FIG. 4

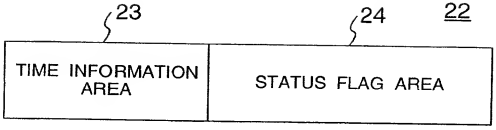

23
24
22
TIME INFORMATION AREA
STATUS FLAG AREA

FIG. 6

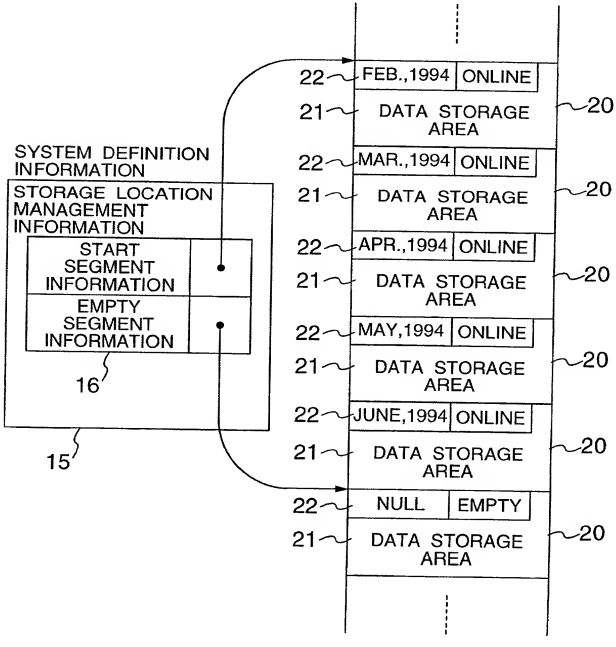

SYSTEM DEFINITION INFORMATION
STORAGE LOCATION MANAGEMENT INFORMATION
START SEGMENT INFORMATION
EMPTY SEGMENT INFORMATION
16
15
22
21
20
FEB.,1994
ONLINE
DATA STORAGE AREA
MAR.,1994
APR.,1994
MAY,1994
JUNE,1994
NULL
EMPTY

FIG. 5

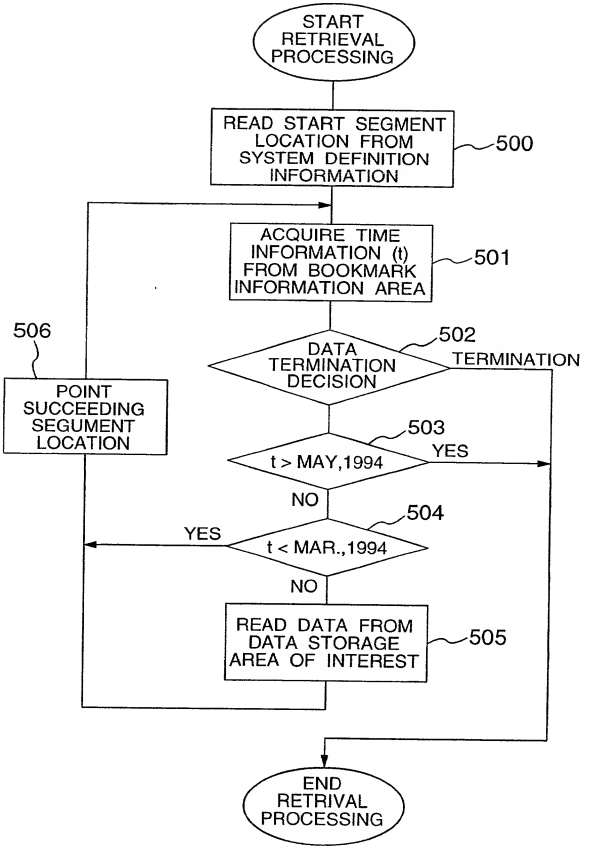

START RETRIEVAL PROCESSING
READ START SEGMENT LOCATION FROM SYSTEM DEFINITION INFORMATION
500
ACQUIRE TIME INFORMATION (t) FROM BOOKMARK INFORMATION AREA
501
DATA TERMINATION DECISION
502
TERMINATION
506
POINT SUCCEEDING SEGUMENT LOCATION
t > MAY,1994
503
YES
NO
t < MAR.,1994
504
YES
NO
READ DATA FROM DATA STORAGE AREA OF INTEREST
505
END RETRIVAL PROCESSING

FIG. 7

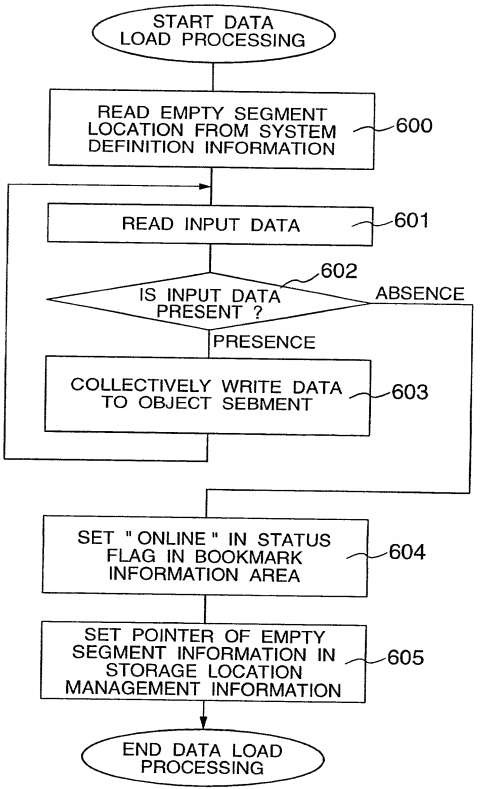

START DATA LOAD PROCESSING
READ EMPTY SEGMENT LOCATION FROM SYSTEM DEFINITION INFORMATION
600
READ INPUT DATA
601
602
IS INPUT DATA PRESENT ?
ABSENCE
PRESENCE
COLLECTIVELY WRITE DATA TO OBJECT SEBMENT
603
SET " ONLINE " IN STATUS FLAG IN BOOKMARK INFORMATION AREA
604
SET POINTER OF EMPTY SEGMENT INFORMATION IN STORAGE LOCATION MANAGEMENT INFORMATION
605
END DATA LOAD PROCESSING

FIG. 8

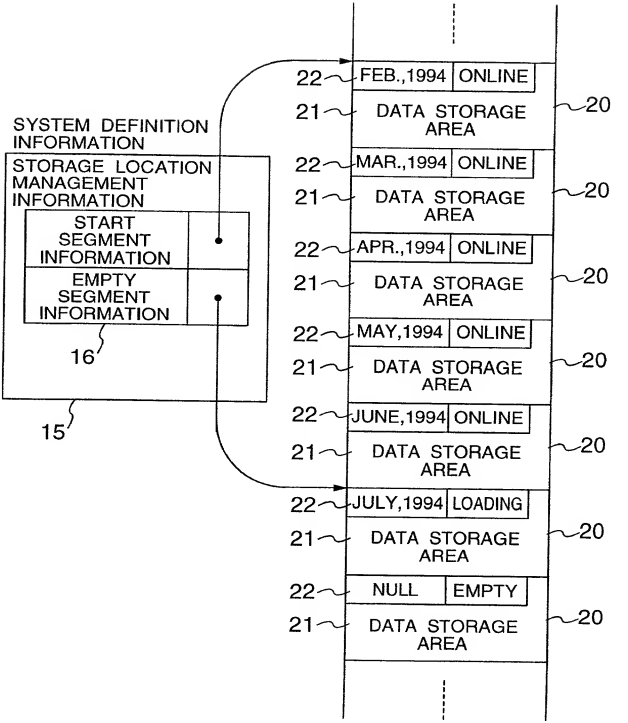

SYSTEM DEFINITION INFORMATION
STORAGE LOCATION MANAGEMENT INFORMATION
START SEGMENT INFORMATION
EMPTY SEGMENT INFORMATION
16
15
22
21
FEB.,1994
ONLINE
DATA STORAGE AREA
20
MAR.,1994
APR.,1994
MAY,1994
JUNE,1994
JULY,1994
LOADING
NULL
EMPTY

FIG. 9

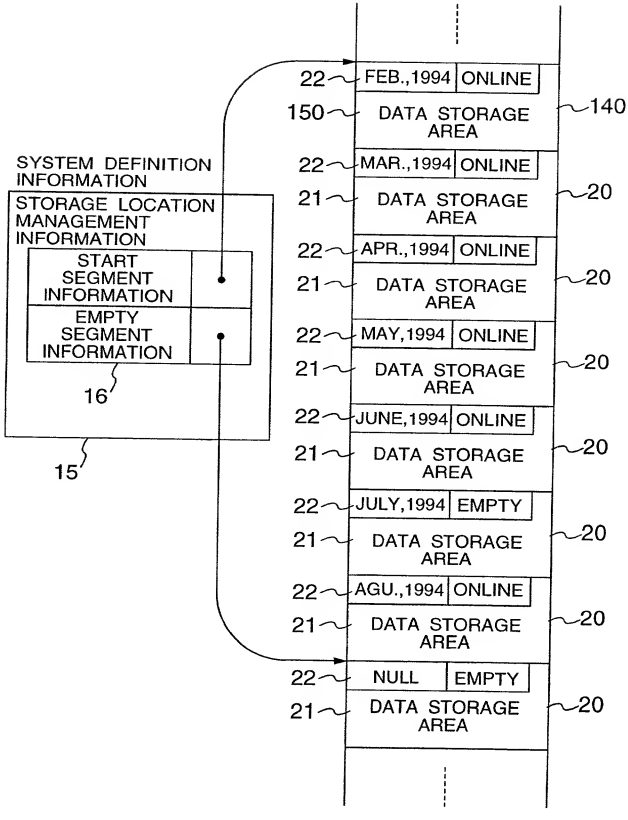

SYSTEM DEFINITION INFORMATION
STORAGE LOCATION MANAGEMENT INFORMATION
START SEGMENT INFORMATION
EMPTY SEGMENT INFORMATION
16
15
22
FEB.,1994
ONLINE
150
DATA STORAGE AREA
140
22
MAR.,1994
ONLINE
21
DATA STORAGE AREA
20
22
APR.,1994
ONLINE
21
DATA STORAGE AREA
20
22
MAY,1994
ONLINE
21
DATA STORAGE AREA
20
22
JUNE,1994
ONLINE
21
DATA STORAGE AREA
20
22
JULY,1994
EMPTY
21
DATA STORAGE AREA
20
22
AGU.,1994
ONLINE
21
DATA STORAGE AREA
20
22
NULL
EMPTY
21
DATA STORAGE AREA
20

FIG. 10

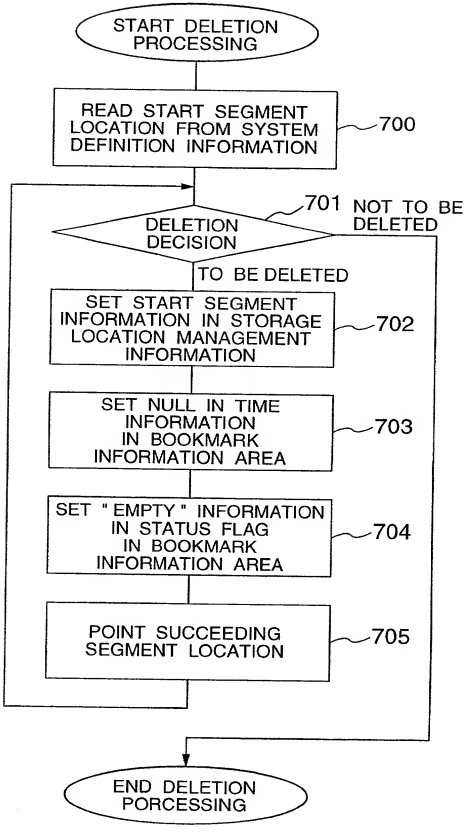

START DELETION PROCESSING
READ START SEGMENT LOCATION FROM SYSTEM DEFINITION INFORMATION
700
701
DELETION DECISION
NOT TO BE DELETED
TO BE DELETED
SET START SEGMENT INFORMATION IN STORAGE LOCATION MANAGEMENT INFORMATION
702
SET NULL IN TIME INFORMATION IN BOOKMARK INFORMATION AREA
703
SET " EMPTY " INFORMATION IN STATUS FLAG IN BOOKMARK INFORMATION AREA
704
POINT SUCCEEDING SEGMENT LOCATION
705
END DELETION PORCESSING

FIG. 11

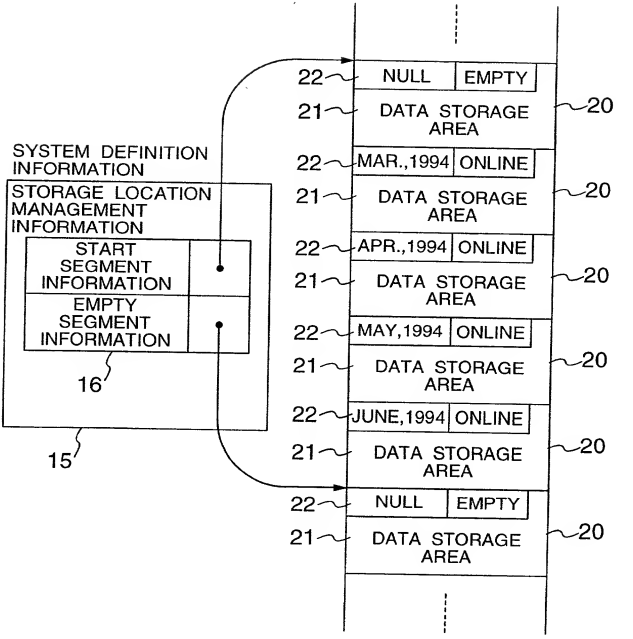

SYSTEM DEFINITION INFORMATION
STORAGE LOCATION MANAGEMENT INFORMATION
START SEGMENT INFORMATION
EMPTY SEGMENT INFORMATION
16
15
22
NULL
EMPTY
21
DATA STORAGE AREA
20
MAR.,1994
ONLINE
APR.,1994
ONLINE
MAY,1994
ONLINE
JUNE,1994
ONLINE

FIG. 12

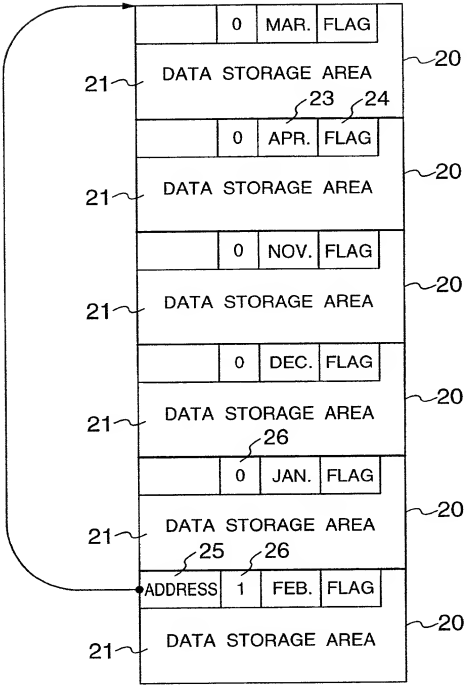
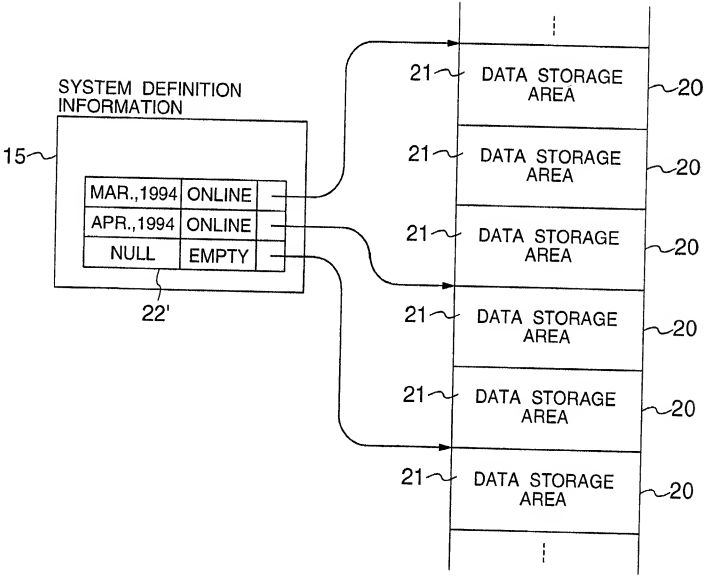

0
MAR.
FLAG
20
21
DATA STORAGE AREA
23
24
0
APR.
FLAG
20
21
DATA STORAGE AREA
0
NOV.
FLAG
20
21
DATA STORAGE AREA
0
DEC.
FLAG
20
21
DATA STORAGE AREA
26
0
JAN.
FLAG
20
21
DATA STORAGE AREA
25
26
ADDRESS
1
FEB.
FLAG
20
21
DATA STORAGE AREA

FIG. 13


SYSTEM DEFINITION INFORMATION
15
MAR.,1994
ONLINE
APR.,1994
ONLINE
NULL
EMPTY
22'
21
DATA STORAGE AREA
20